What is claimed is:

1. A composition comprising a hydrophilic portion and a hydrophobic portion joined by an ortho ester linker, wherein the ortho ester linker hydrolyzes at an increasing rate as the pH is reduced below 7.

2. The composition of claim 1, wherein the hydrophilic portion comprises a polymer capable of increasing circulation time in the bloodstream of animals when incorporated on the surface of an encapsulator.

3. The composition of claim 2, wherein the hydrophilic portion comprises methoxypolyethylene glycol.

4. The composition of claim 2, wherein the hydrophilic portion is selected from the group consisting of polyethyleneglycol, hydroxylated dendrons, poly(methyloxazoline), poly(ethyloxazoline) and polyvinylpyrrolidone.

5. The composition of claim 2, wherein the hydrophilic portion comprises polyethyleneglycol having a molecular weight from 200 to 20000.

6. The composition of claim 1, wherein the hydrophilic portion comprises a targeting ligand.

7. The composition of claim 1, wherein the hydrophilic portion comprises a cationic group.

8. The composition of claim 7, wherein the cationic group is selected from the group consisting of primary amines, secondary amines, tertiary amines, quaternary ammoniums or imidazoles.

9. The composition of claim 1, wherein the hydrophobic portion is selected from the group consisting of diacyl glycerols, distearoylglycerol, dipalmitoylglycerol, dimyristoyl glycerol, dioleoyl glycerol.

10. The composition of claim 1, wherein the hydrophobic portion is selected from the group consisting of tocopherol, cholesterol, coenzyme Q, and ceramide.

11. The composition of claim 1, wherein the ortho ester linker comprises a diortho ester.

12. The composition of claim 11, wherein the ortho ester linker comprises a diketene acetal derivative.

13. The composition of claim 11, wherein the ortho ester linker comprises a 3,9-dialkoxylated 3,9-Diethyl-2,4,8,10-tetraoxaspiro[5,5]undecane derivative.

14. The composition of claim 11, wherein the composition comprises 3,9-Diethyl-3-(2,3-distearoyloxypropyloxy)-9-(methoxypolyethyleneglycol2000-1-yl)-2,4,8,10-tetraoxaspiro[5,5]undecane.

15. The composition of claim 1, wherein the ortho ester linker comprises a single ortho ester.

16. The composition of claim 15, wherein the ortho ester linker comprises a dichloromethylmethyl ether derivative and the hydrophilic portion is cationic.

17. The composition of claim 16, wherein the composition comprises *N,N*-dimethyl-(4-methoxy-(cholest-5-en-3β-oxy)hept-3,5-dioxa-yl)ammonium (DOC).

18. The composition of claim 16, wherein the composition comprises *N,N,N*-trimethyl-(4-methoxy-(cholest-5-en-3β-oxy)hept-3,5-dioxa-yl)amine iodide.

19. A composition comprising an encapsulator, wherein the encapsulator comprises the composition of claim 1.

20. The composition of claim 19, wherein the encapsulator further comprises a lipid.

21. The composition of claim 20, wherein the lipid comprises DOPE.

22. The composition of claim 21, comprising DOPE/POD in a ratio of about 97:3 to 85:15.

23. The composition of claim 21, comprising DOPE/DOC.

24. The composition of claim 20, wherein the lipid comprises a fusogenic lipid.

25. The composition of claim 20, wherein the lipid comprises a lipid selected form the group consisting of phosphatidylcholine, phosphatidylglycerol, phosphatidylethanolamine, phosphatidylserine, phosphatidic acid, cholesteryl hemisuccinate, cholesterol sulfate, ceramide, cardiolipid, *N*[1-,2dioleoyl-3-trimethyl]ammonium propane (DOTAP), dimethyldioctadecylammonium bromide (DDAB), 1-palmitoyl-2-oleoyl-sn-glycero-3-ethyl-phosphocholine,*N*[1-(2,3-dioleyloxy)propyl]-*N,N,N,*-triethylammonium (DOTMA),triglycerides, squalene, coenzyme Q and alkyl acylcarnitine esters.

26. The composition of claim 20, wherein the lipid further comprises a targeting ligand.

27. The composition of claim 26, wherein the targeting ligand is selected a group consisting of hyaluronan, antibodies, peptides, folate, receptor antagonists, carbohydrates, transferrin, protein hormones, and cytokines.

28. The composition of claim 19, wherein the hydrophilic portion comprises a targeting ligand.

29. The composition of claim 28, wherein the targeting ligand is selected a group consisting of hyaluronan, antibodies, peptides, folate, receptor antagonists, carbohydrates, transferrin, protein hormones, and cytokines.

30. An encapsulator for delivering a compound, comprising an amphipathic low pH sensitive lipidic composition wherein the encapsulator exhibits degradation of less than 10% within 3 hours at a pH of 7.4 and degradation greater than 50% within 60 min at a pH of 5.0.

31. The encapsulator of claim 30, wherein the amphipathic low-pH sensitive lipidic composition comprises a hydrophilic portion, a hydrophobic portion and an ortho ester linker.

32. The encapsulator of claim 31, wherein the hydrophilic portion comprises PEG.

33. The encapsulator of claim 32, wherein the ortho ester linker comprises a diketene acetal derivative.

34. The encapsulator of claim 30, further comprising a lipid.

35. The encapsulator of claim 30, wherein the lipid is selected from the group consisting of phosphatidylcholine, phosphatidylglycerol, phosphatidylethanolamine, phosphatidylserine, phosphatidic acid, cholesteryl hemisuccinate, cholesterol sulfate, ceramide, cardiolipid, *N*[1-,2dioleoyl-3-trimethyl]ammonium propane (DOTAP), dimethyldioctadecylammonium bromide (DDAB), 1-palmitoyl-2-oleoyl-sn-glycero-3-ethyl-phosphocholine,*N*[1-(2,3-dioleyloxy)propyl]-*N,N,N,*-triethylammonium (DOTMA), triglycerides, squalene, coenzyme Q and alkyl acylcarnitine esters, and dioleoylphosphatidyl ethanolamine (DOPE).

36. The encapsulator of claim 33, wherein the hydrophilic portion comprises PEG, further comprising a lipid.

37. The encapsulator of claim 30, wherein the ortho ester linker comprises a dialkoxy methoxy methine group

38. A method for delivering a drug to a cell comprising the steps of providing an encapsulator comprising an LOC and the drug and administering the encapsulator.

39. The method of claim 38, further comprising the steps of reducing pH, degrading the encapsulator and releasing the drug. Add support active lowering of pH

40. The method of claim 38 further comprising the steps of preparing a dry powder formulation of the encapsulator and administering the dry powder.

41. The method of claim 40, further comprising the steps of preparing a dry powder formulation of the encapsulator, rehydrating the encapsulator in an appropriate buffer and administering the encapsulator.

42. A method for incorporating an LOC into an encapsulator comprising the step of mixing the encapsulator with the LOC.

43. The method of claim 42, further comprising the steps of:

a) preparing a dry film of the LOC;

b) rehydrating the LOC to form micelles; and

c) combining the micelles with an encapsulator suspension.

44. The method of claim 42, wherein the encapsulator comprises a cationic lipoplex further comprising the steps of preparing a cationic lipoplex and coating the lipoplex with the LOC.

45. The method of claim 42 further comprising the steps of:

a) preparing a dry film of the LOC;

b) preparing an encapsulator suspension; and

c) combining the encapsulator suspension with the dry film.

46. The method of claim 42, further comprising the steps of :

a) preparing the LOC in a non-aqueous, water miscible solvent

b) preparing an encapsulator suspension; and

c) combining the encapsulator suspension with the LOC in the water miscible solvent.

47. The method of claim 46, wherein the non-aqueous, water miscible solvent is selected from the group consisting of acetonitrile, dimethylsulfoxide, glyme, methylpyrolidone, ethanol, triacetin and mixtures of these.

48. A method for storing an encapsulator for delivering a compound, comprising the steps of:

a) providing an encapsulator comprising an amphipathic low pH sensitive lipidic compound wherein the encapsulator exhibits degradation of less than 10% within 3 hours at a pH of 7.4 and degradation greater than 50% within 60 min at a pH of 5.0; and

b) lyophilizing the encapsulator.

49. The method of claim 48, further comprising the step of milling the lyophilized encapsulator to form a dry powder.

50. A method for gene transfer comprising the steps of:

a) providing encapsulator comprising an amphipathic low pH sensitive lipidic composition and a polynucleotide;

b) administering the encapsulator to an animal;

c) reducing the pH to degrade the encapsulator; and

d) releasing the polynucleotide.

51. The method of claim 50, further comprising the step of forming a dry powder formulation from the encapsulator prior to administering the encapsulator.

52. The method of claim 51, further comprising the step of rehydrating the encapsulator prior to administering the encapsulator.